

AGENCY OF NATURAL RESOURCES  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
WASTEWATER MANAGEMENT DIVISION  
103 SOUTH MAIN STREET  
WATERBURY, VERMONT 05671-0405

FACT SHEET  
(October 2011)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO  
DISCHARGE TO WATERS OF THE UNITED STATES

NPDES NO: VT0100021  
PERMIT NO: 3-1261  
PROJECT ID NO: RU96-0001

NAME AND ADDRESS OF APPLICANT:

Town of Bennington  
205 South Street  
Bennington VT 05201

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Bennington Wastewater Treatment Facility  
244 Harrington Road  
Bennington, Vermont

RECEIVING WATER: Walloomsac River

CLASSIFICATION: Class B with a waste management zone. Class B waters are suitable for bathing and recreation, irrigation and agricultural uses; good fish habitat; good aesthetic value; acceptable for public water supply with filtration and disinfection. A waste management zone is a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings.

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant applied on June 18, 2010 to the Vermont Department of Environmental Conservation for renewal of the permit to discharge into the designated receiving water. At this time the Department has made a tentative decision to reissue the discharge permit. The facility is engaged in the treatment of municipal wastewater. The discharge is from the outfall of the Town of Bennington Wastewater Treatment Facility to the Walloomsac River.

## II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters is based on state and federal laws and regulations, the discharge permit application, and the recent self-monitoring data.

The complete application, draft permit, and other information, including calculations, used in the development of this permit are on file and may be inspected by appointment at the VTDEC, Wastewater Management Division, VSAC Office at 10 East Allen Street, Winooski, VT. Copies will be made at a cost based on the current Secretary of State Official Fee Schedule for Copying Public Records from 8:00 AM to 4:30 PM, Monday through Friday. The draft permit and fact sheet may also be viewed on the Division's website at [www.amr.state.vt.us/dcc/www/wwwmd.cfm](http://www.amr.state.vt.us/dcc/www/wwwmd.cfm).

## III. Limitations and Conditions

The effluent limitations of the permit, the monitoring requirements, and any implementation schedule (if required), may be found on the following pages of the permit:

Effluent Limitations:	Page 2 of 20
Monitoring Requirements:	Pages 4 - 8 of 20

## IV. Permit Basis and Explanation of Effluent Limitation Derivation

### **Facility History:**

The Town of Bennington owns and operates the Bennington Wastewater Treatment Facility which provides secondary/tertiary treatment and disinfection of municipal wastewater. The facility, which was upgraded from primary treatment in 1985, consists of two primary settling tanks, four trains of rotating biological contactor (RBC) units, and secondary clarification followed by chlorine disinfection and de-chlorination. Due to water quality considerations, the facility also has a sand filtration system that is operated in the summer months as necessary to meet the effluent limits. Sludge is processed via anaerobic digestion followed by dewatering and composting at the treatment facility. Five pump stations serve the facility. A 20-year engineering evaluation was completed in 2009. The report indicated that there were no deficiencies requiring immediate attention but did discuss some needs that will need to be addressed to assure that the facility continues to operate effectively.

### **Receiving Water:**

The Walloomsac River originates in Bennington at the confluence of Jewett and Barney Brooks. It flows for about 16 miles until it empties into the Hoosic River in New York. Its drainage basin is 111 square miles. The segment of the Walloomsac River downstream of the Bennington WWTF is classified as Class B and is designated as Cold Water Fish Habitat (Vermont Water Quality Standards). A three mile Waste Management Zone has been established below the Bennington WWTF outfall pursuant to 10 V.S.A. §1252. With the exception of the Bennington Water Treatment Facility, there are no permitted direct discharges above the Bennington WWTF.

The 7Q10 flow of the Walloomsac River used for calculation purposes for this permit is 31.97 cfs. The instream waste concentration (IWC) is 0.198. The low monthly median flow used for nutrient assessments is 70.50 cfs resulting in an IWC of 0.101. For purposes of certain metals calculations, a hardness of 103 mg/l for the Walloomsac River was used (from 2008 data). The design flow of the facility is 5.1 MGD (7.895 CFS).

In 2008 VTDEC conducted biological assessments of the Walloomsac River above and below the Bennington WWTF outfall. Additionally, NYSDEC conducted a biological assessment in 2003 (*Walloomsac River Biological Assessment, 2003 Survey*). Both assessments indicated the biological condition of the Walloomsac River below the Bennington WWTF meets Class B standards for aquatic biota and aquatic habitat uses.

**Flow** - The effluent flow limitation remains at 5.1 MGD, annual average, representing the facility's design flow. In addition, the facility is designed for a peak flow of 11.0 MGD. The facility maintains a continuous discharge.

**Biochemical Oxygen Demand (BOD<sub>5</sub>)** - The effluent limitations for biochemical oxygen demand remain unchanged from the previous permit. The monthly average (30 mg/l) and weekly average (45 mg/l) reflect the minimum level of effluent quality specified for secondary treatment in 40 CFR Part 133.102. In addition, the permit contains a 50 mg/l, maximum day, BOD limitation. This is the Department standard applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Agency implements the limit to supplement the federal technology based limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. Mass limits (1276 lbs/day, monthly average and 1914 lbs/day, weekly average) are derived by multiplying the concentration limits by the permitted flow. The BOD weekly monitoring requirement is unchanged from the previous permit.

**Total Suspended Solids (TSS)** - The effluent limitations for total suspended solids remain unchanged from the previous permit. The monthly average (30 mg/l) and weekly average (45 mg/l) reflect the minimum level of effluent quality specified for secondary treatment in 40 CFR Part 133.102. In addition, the permit contains a 50 mg/l, maximum day, TSS limitation. This is the Department standard applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Agency implements the limit to supplement the federal technology based limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. Mass limits (1276 lbs/day, monthly average and 1914 lbs/day, weekly average) are derived by multiplying the concentration limits by the permitted flow. The TSS weekly monitoring requirement is unchanged from the previous permit.

**Ultimate Oxygen Demand** - In 1985 the Department established an assimilative capacity limit for this discharge of 1700 lbs UOD, daily maximum. This limit and seasonal (June through September) monitoring remain the same as in the previous permit.

**Total Kjeldahl Nitrogen** - The seasonal (June through September) weekly monitoring requirement remains unchanged from the previous permit.

**pH** - The pH limitation remains at 6.5 - 8.5 Standard Units as specified in Section 3-01 B.9. in the Vermont Water Quality Standards. Monitoring remains at daily.

**Settleable Solids** - The limitation of 1.0 ml/l instantaneous maximum and daily monitoring remain unchanged from the previous permit. This numeric limit was established in support of the narrative standard in Section 3-01 B.5. of the Vermont Water Quality Standards.

**Total Nitrogen and Total Phosphorus**- Vermont DEC is currently in the process of proposing scientifically based nitrogen and phosphorus criteria for lakes and wadeable streams for review by the Vermont Water Resources Panel and the USEPA. In support of this effort the Department is including requirements in WWTF discharge permits to monitor discharges for total nitrogen and total phosphorus. Once adopted the total nitrogen and phosphorus criteria will be used to determine the potential of WWTF discharges to cause or contribute to eutrophication and adversely impact the aquatic biota downstream of the discharge. Monitoring is required monthly.

**Biomonitoring and Water Quality Assessment** – The permit (Condition I.C.) contains a condition to complete an assessment of the water quality (nutrients) and macroinvertebrate assemblages of the Walloomsac River in the vicinity of the Bennington WWTF in order to assess the impact of the discharge. The biomonitoring assessment is structured to take place in summers 2013 and 2015. Monthly monitoring for total phosphorus and total nitrogen is required both upstream and downstream of the discharge during the summer months (June through October). Instream phosphorus and nitrogen monitoring shall occur over a period of three years beginning in 2013 through 2015.

The most recent biological assessments above (RM 10.1) and below (RM 9.2) the Bennington WWTF were conducted on September 12, 2008. These assessments targeted the macroinvertebrate community, and were intended to address potential impacts from the Bennington WWTF. The biological assessments above and below the WWTF scored very good and good respectively, indicating that the biological condition meets Class B standards for aquatic biota and aquatic habitat uses for the Medium High Gradient (MHG) stream type. Additionally bioassessments conducted at the downstream site (RM 9.2) since 1989, which represents 6 sampling events (1989, 1992, 1994, 1998, 2003, and 2008) have all scored good, meeting Class B standards.

Based on the 2008 biomonitoring data, additional biomonitoring and water quality assessment is merited. This is due to the evidence of increased nutrient concentrations coupled with a reduction in biological integrity from “very good” to “good” from upstream to downstream, coincident with a lack of other potential sources of impact along the reach downstream from the outfall to the sampling point. While this increase in concentration and change in biological integrity does not result in impairment, it does constitute a measurable limited change to water quality.

The collection and analysis of the data shall comply with procedures established by the Department’s Water Quality Division, Biomonitoring and Aquatic Studies Section as described in the *Water Quality Division Field Methods Manual, April 2006*. Specifically, General Water Sample Collection Methods in Section 4, and Lotic Semi-Quantitative Benthic Surveys in Section 6.4.1. Sections 6.4.2, 6.4.3 and 6.6 provide additional

information on documenting physical characteristics and processing samples. See: [http://www.anr.state.vt.us/dec/waterq/bass/docs/bs\\_fieldmethodsmanual.pdf](http://www.anr.state.vt.us/dec/waterq/bass/docs/bs_fieldmethodsmanual.pdf)

The document, *Biocriteria for Fish and Macroinvertebrate Assemblages in Vermont Wadeable Streams and Rivers, 2004*, also provides information on Macroinvertebrate Community Methods in Attachments B and C. (pp. 36-69) See: [http://www.anr.state.vt.us/dec/waterq/bass/docs/bs\\_wadeablestream2.pdf](http://www.anr.state.vt.us/dec/waterq/bass/docs/bs_wadeablestream2.pdf)

***E. coli* Bacteria** - The *E. coli* limitation is 77/100 ml as specified in Section 3-04 B.3., Vermont Water Quality Standards, effective July 2, 2000. Weekly summertime (June through September) and monthly wintertime monitoring remains the same as in the previous permit. However, only seasonal disinfection is required (April through October) therefore monitoring is not required for the months of November through March.

On March 26, 2007 EPA published new guidelines establishing new bacterial testing procedures for wastewater and sewage sludge as part of 40 CFR Part 136 (see Federal Register Vol. 72, No. 57, Monday, March 26, 2007, p.14220). The new guidelines establish the *E. coli* analytical methods cited in Part I.E. of the permit as the only approved methods for enumerating *E. coli* in wastewater and sewage sludge. The guidelines are effective April 25, 2007.

Notably the membrane filter method using the two step incubation technique (i.e. Method 9213D, Standard Methods) which was previously approved by prior NPDES discharge permits is no longer cited by EPA as an approved method. Therefore permittees who are currently using Method 9213D for *E. coli* analysis must switch over to one of the three approved methods listed in Part I.G. of the permit.

**Total Residual Chlorine (TRC)** - The TRC limit of 0.1 mg/l is based on meeting the instream water quality acute and chronic chlorine criteria (0.019 mg/l and 0.011 mg/l respectively) in the Vermont Water Quality Standards for the protection of aquatic biota. Daily monitoring is required. Monitoring is not required for the months of November through March *unless chlorination is occurring*.

**Toxicity Testing** - 40 CFR Part 122.44(d)(1) and the 1994 Vermont Toxic Discharge Control Strategy require the Department to assess whether the discharge causes, has the reasonable potential to cause, or contribute to an excursion above any narrative or numeric water quality criteria. In addition, Part 122.21 requires all publicly owned treatment works (POTW) with flows greater than or equal to one MGD to complete a minimum of four WET tests. WET testing (acute) was conducted by the Town in August 2007 and February 2009; also, toxicity scans were completed in November 2009, February 2010, and May 2010. Those results indicated that this discharge did not have an instream toxic impact. Confirmation that those findings are still valid is required at permit renewal. The proposed permit includes (Part I.B.) one two-species **acute/chronic** and one two-species acute WET tests during the term of the permit to ensure compliance with Part 122.21, 122.44(d)(1), and the Toxic Discharge Control Strategy. The permit also includes three toxicity scans in compliance with Part 122.21.

If the results of these tests indicate a reasonable potential to cause an instream toxic impact, the Department may require additional testing, establish a WET limit, or require a Toxicity Reduction Evaluation.

**Additional Monitoring** - For all facilities with a design flow of greater than 0.1 MGD, 40 CFR § 122.21(j), Application for a permit, requires the submittal of effluent monitoring data for those parameters identified in Condition I.G.3. of the permit.

Samples must be collected once annually during various seasons (i.e. include each of the four quarters during the permit period) and the results submitted by December 31 of each year.

**Waste Management Zone** - As defined under 10 V.S.A. §1251(16), a waste management zone is "a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings. Throughout the receiving waters, water quality criteria must be achieved but increased health risks exist due to the authorized discharge".

The proposed permit retains the existing waste management zone (WMZ) that extends downstream from the outfall for three miles in the Walloomsac River.

**Electric Power Failure** - Within 30 days of the effective date of the permit, the permittee must submit to the Department, updated documentation addressing how the discharge will be handled in the event of an electric power outage. The effluent must receive a minimum of primary treatment (or in the case of ultraviolet light disinfection systems, not less than secondary treatment) plus disinfection.

**Operation, Management, and Emergency Response Plans** - As required by the revisions to 10 V.S.A. Section 1278, promulgated in the 2006 legislative session, Condition I.I. has been included in the proposed permit. This condition requires that the permittee implement the Operation, Management and Emergency Response Plan, as approved by the Agency (11/2/09 and 1/18/11), for the wastewater treatment facility, sewage pump/ejector stations, collection system, and stream crossings.

**Sand Filter Operation** - Special Condition I.A.2. requires that the facility operate the sand filter as necessary to comply with the effluent limits specified in the permit. In addition, the permittee must monitor the USGS stream gage just upstream of the WWTF outfall. The sand filter must be on-line when stream flows are equal to or less than 40 CFS during the period of June 1 through September 30. Since the 7Q10 flow of the Walloomsac River at the WWTF is approximately 32 CFS, this provides a level of safety to prevent dissolved oxygen problems in the river.

#### V. Procedures for Formulation of Final Determinations

The public comment period for receiving comments on this draft permit is from October 24 through November 23, 2011 during which time interested persons may submit their written views on the draft permit. All written comments received by 4:30 PM on November 23, 2011 will be retained by the Department and considered in the formulation of the final determination to issue, deny or modify the draft permit. The period of comment may be extended at the discretion of the Department.

Written comments should be sent to:

Vermont Agency of Natural Resources  
Department of Environmental Conservation  
Wastewater Management Division - Sewing Building  
103 South Main Street  
Waterbury, VT 05671-0405

Comments may also be submitted by e-mail using the e-mail comment provisions included at <http://www.anr.state.vt.us/dec/ww/Drafts.htm>.

Any interested person or groups of persons may request or petition for a public hearing with respect to this draft permit. Any such request or petition for a public hearing shall be filed within the public comment period described above and shall indicate the interest of the party filing such request and the reasons why a hearing is warranted.

The Department will hold a hearing if there is significant public interest in holding such a hearing. Any public hearing brought in response to such a request or petition will be held in the geographical area of the proposed discharge or other appropriate area, at the discretion of the Department and may, as appropriate, consider related groups of draft permits. Any person may submit oral or written statements and data concerning the draft permit at the public hearing. The Department may establish reasonable limits on the time allowed for oral statements and may require the submission of statements in writing. All statements, comments, and data presented at the public hearing will be retained by the Department and considered in the formulation of the final determination to issue, deny, or modify the draft permit.

*No comments were received during the public notice period.*

